

09/818,954  
Response dated November 7, 2006  
Reply to Final Rejection dated June 23, 2006

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DEC 19 2006

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:
  - (a) the nucleotide sequence set forth in SEQ ID NO: 2;
  - (b) a nucleotide sequence encoding the polypeptide set forth in SEQ ID NO: 1;
  - (c) a nucleotide sequence which hybridizes to the complement of (a) or (b) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, followed by at least one but not more than two washes wash step in 2x SSC, 0.1% SDS at room temperature for not more than 20 minutes, followed by a wash in 0.1x SSC, 0.1% SDS at 50°C for not more than 10 minutes, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, followed by at least one but not more than two washes wash step in 2x SSC, 0.1% SDS at room temperature for not more than 20 minutes, followed by a wash in 0.1x SSC, 0.1% SDS at 50°C for not more than 10 minutes, and wherein the encoded polypeptide, when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;
  - (d) a nucleotide sequence complementary to any of (a), (b), or (c).
2. (Currently amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:
  - (a) a nucleotide sequence encoding a polypeptide that is at least about 90, 95, 96, 97, 98, or 99 percent identical to a mature form of the polypeptide set forth in SEQ ID NO: 1, wherein the polypeptide, when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

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~~(b) a nucleotide sequence encoding an allelic variant or splice variant of the nucleotide sequence set forth in SEQ ID NO: 2, wherein an encoded mature form of the polypeptide, when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;~~

(b) (e) a nucleotide sequence which hybridizes to the complement of any of (a)-(d) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, followed by at least one but not more than two washes wash step in 2x SSC, 0.1% SDS at room temperature for not more than 20 minutes, followed by a wash in 0.1x SSC, 0.1% SDS at 50°C for not more than 10 minutes, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, followed by at least one but not more than two washes wash step in 2x SSC, 0.1% SDS at room temperature for not more than 20 minutes, followed by a wash in 0.1x SSC, 0.1% SDS at 50°C for not more than 10 minutes, and wherein the encoded polypeptide, when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation; and

(c) (d) a nucleotide sequence complementary to any of (a)-(b) (e).

3. (Currently amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one conservative amino acid substitution in the region extending from residue 25 to the C-terminus of SEQ ID NO:1, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(b) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one amino acid insertion in the region extending from residue 25 to the C-terminus of SEQ ID NO:1, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

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(c) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one amino acid deletion in the region extending from residue 25 to the C-terminus of SEQ ID NO:1, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(d) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 which has a C- and/or N- terminal truncation in the region extending from residue 25 to the C-terminus of SEQ ID NO:1, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(e) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one modification occurring in the region extending from residue 25 to the C-terminus of SEQ ID NO:1 selected from the group consisting of amino acid substitutions, amino acid insertions, amino acid deletions, C-terminal truncation, and N-terminal truncation, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and, when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(f) a nucleotide sequence which hybridizes to the complement of any of (a)-(e) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, followed by at least one but not more than two washes wash-step in 2x SSC, 0.1% SDS at room temperature for not more than 20 minutes, followed by a wash in 0.1x SSC, 0.1% SDS at 50°C for not more than 10 minutes, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, followed by at least one but not more than two washes wash-step in 2x SSC, 0.1% SDS at room temperature for not more than 20 minutes, followed by a wash in 0.1x SSC, 0.1% SDS at 50°C for not more than 10 minutes, and wherein the encoded polypeptide, when heterodimerized to human  $\alpha 2$  polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation; and

(g) a nucleotide sequence complementary to any of (a)-(f).

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4. (Original) A vector comprising the nucleic acid molecule of Claims 1, 2, or 3.
  5. (Original) A host cell comprising the vector of Claim 4.
  6. (Original) The host cell of Claim 5 that is a eukaryotic cell.
  7. (Original) The host cell of Claim 5 that is a prokaryotic cell.
  8. (Currently amended) A process of producing a polypeptide ~~encoded by the nucleic acid molecule of Claims 1, 2, or 3~~ comprising culturing the host cell of Claim 5 under suitable conditions to express the polypeptide, and optionally isolating the polypeptide from the culture.
  9. (Canceled)
  10. (Currently amended) The process of Claim 8, wherein the nucleic acid molecule comprises promoter DNA ~~other than the native promoter DNA~~ operatively linked to the DNA encoding the polypeptide, wherein the promoter DNA is not the native promoter DNA.
  11. (Original) The isolated nucleic acid molecule according to Claim 2 wherein the percent identity is determined using a computer program selected from the group consisting of GAP, BLASTP, BLASTN, FASTA, BLASTA, BLASTX, BestFit, and the Smith-Waterman algorithm.
- Claims 12 - 46. (Canceled)
47. (Original) A composition comprising a nucleic acid molecule of Claims 1, 2, or 3 and a pharmaceutically acceptable formulation agent.
  48. (Original) A composition of Claim 47 wherein said nucleic acid molecule is contained in a viral vector.

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49. (Original) A viral vector comprising a nucleic acid molecule of Claims 1, 2, or 3.

50. (Previously Presented) A fusion polypeptide comprising a polypeptide encoded by a nucleic acid molecule of Claims 1, 2, or 3 fused to a heterologous amino acid sequence.

51. (Original) The fusion polypeptide of Claim 50 wherein the heterologous amino acid sequence is an IgG constant domain or fragment thereof.

Claims 52 - 60. (Canceled)

61. (Previously Presented) A vector comprising at least one nucleic acid molecule according to Claim 1, 2, or 3, and at least one nucleic acid molecule encoding human  $\alpha 2$  polypeptide.

Claims 62 - 64. (Canceled)

65. (Previously Presented) A process of producing an  $\alpha 2/\beta 10$  heterodimer comprising culturing the host cell of Claim 5 under suitable conditions to express the  $\alpha 2/\beta 10$  heterodimer, and optionally isolating the  $\alpha 2/\beta 10$  heterodimer from the culture.

Claims 66 - 99. (Canceled)